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(54) Title: HIGHLY ACIDIC METALATED MIXTURE OF INORGANIC ACIDS

(57) Abstract: A highly acidic metalated mixture of inorganic acids ("HAMMIA"). The acidic mixture or composition can be isolated from a mixture prepared by mixing a salt of phosphoric acid, and a preformed, or in-situ generated, solution or suspension of an acidic sparingly-soluble Group IIA complex ("AGIIS"), wherein the solution or suspension of AGIIS is in an amount sufficient to render the acidic pH of the composition to be less than about 2. An adduct which contains the acidic composition discussed above and an additive. Also a method to reduce biological contaminants in a nutriment material using the acidic composition or the adduct.

**What is claimed is:**

1. A composition having an acidic pH, the composition being prepared by mixing ingredients comprising:
  - a salt of phosphoric acid; and
  - 5 a preformed, or in-situ generated, solution or suspension of an acidic sparingly-soluble Group IIA complex ("AGIIS"), wherein the solution or suspension of AGIIS is in an amount sufficient to render the acidic pH of the composition to be less than about 2.
- 10 2. The composition of claim 1, wherein the solution or suspension of the AGIIS is isolated from a mixture comprising a mineral acid and a Group IIA hydroxide, or a Group IIA salt of a dibasic acid, or a mixture of the two.
3. The composition of claim 2, wherein the Group IIA hydroxide comprises calcium hydroxide, the mineral acid comprises sulfuric acid and the Group IIA salt of a dibasic acid comprises calcium sulfate.
- 15 4. The composition of claim 1, wherein the solution or suspension of AGIIS having a certain acid normality is less effective in charring sucrose and less corrosive to an animal skin than a saturated solution of calcium sulfate in sulfuric acid having the same acid normality, and wherein the solution or suspension of an AGIIS is of low volatility at room temperature and pressure.
- 20 5. The composition of claim 1, wherein the salt of phosphoric acid comprises a divalent metal salt of phosphoric acid.
6. The composition of claim 5, wherein the divalent metal comprises an alkali earth metal or a metal of first transition series.
7. The composition of claim 1, wherein the salt of phosphoric acid  
25 comprises a mono-valent metal salt of phosphoric acid.

8. The composition of claim 7, wherein the mono-valent metal comprises an alkali metal.
9. The composition of claim 1, further comprising an additive.
10. The composition of claim 9, wherein the additive comprises an alcohol.
11. The composition of claim 10, wherein the alcohol comprises a lower aliphatic alcohol having six or less carbon atoms.
12. The composition of claim 9, wherein the additive comprises an organic acid.
13. The composition of claim 12, wherein the organic acid comprises lactic acid, acetic acid, propionic acid, oxalic acid, peracetic acid, sorbic acid, benzoic acid, butyric acid, glycolic acid, formic acid, monoperphthalic acid, or a mixture thereof.
14. The composition of claim 9, wherein the additive comprises a surface active agent.
15. The composition of claim 14, wherein the surface active agent comprises a cationic surface active agent, an anionic surface agent, a non-ionic surface active agent, or a mixture thereof.
16. The composition of claim 9, wherein the additive comprises a periodic acid.
17. The composition of claim 9, wherein, based on the final weight of the composition, the amount of the additive ranges from about 0.01% to about 99%.